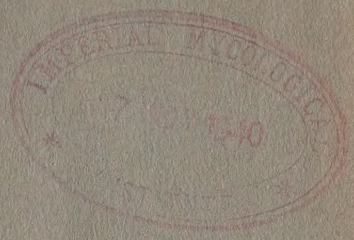
ZANZIBAR PROTECTORATE



ANNUAL REPORT

ON THE

DEPARTMENT OF AGRICULTURE

for the year ended 31st December, 1939

Price: Shs. 2/-

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DEPARTMENT OF AGRICULTURE.

STAFF.

Rank.		Name.
Director	...	R. W. R. Miller, B.A. (Camb.), Dip. Agric. (Camb.).
Senior Agricultural Officer	...	J. C. Muir, B.Sc.Agric. (Glas.), N.D.A., N.D.D.
Agricultural Officers	...	J. E. Baker, Cert.Agric. (Seale Hayne).
		R. Johns, N.D.A., C.D.A. (Aberystwyth), A.I.C.T.A. (Trinidad). (until 24-4-39).
		A. K. Briant, M.A., Dip. Agric. (Cantab.), A.I.C.T.A. (Trinidad).
		F. B. Wilson, M.A. (Cantab.), Dip.Agric. (Cantab.), A.I.C.T.A. (Trinidad) (seconded as Officer in Charge of a Commission on Rural Education in the Protectorate from April, 1st 1938).
		G. E. Tidbury, B.Sc., A.R.C.S., A.I.C.T.A. (Trinidad).
Manager of Plantations	...	I. G. C. Squire (seconded to Debts Settlement Administration from 1st January except for 2½ months).
Temporary Assistant Manager of Plantations	...	J. M. Jamison (except 2½ months during which period he was seconded to Food Control duties).
Inspector of Produce	...	A. C. E. Callan (seconded to the Zanzibar Naval Volunteer Force from 23rd August, 1939 to 31st December, 1939).
Government Chemist	...	L. W. Raymond, B.A., B.Sc. Hons. (London), A.R.C.S., A.I.C. (seconded as Municipal Officer and Commissioner of Debts).
Veterinary Officer	...	Fazal Din Ahmedi, G.P.V.C.

PREFACE.

A summary is presented below of the agricultural policy accepted by Government: —

I. Land.

(1) Assistance in a general settlement of indebtedness incurred upon the security of agricultural land.

(2) Restriction upon the unnecessary mortgaging and permanent alienation of the agricultural land of Arabs and Africans.

II. Food and Nutrition.

The Active encouragement of the extension and improvement of food stuffs produced locally by the people assisted by

(1) The introduction and selection of higher yielding and more nutritious food crops or strains of food crops.

(2) The introduction, acclimatisation and trial of new food crops.

(3) The issue of seeds and other planting materials from small seed stations one of which has been established in each island.

(4) The demonstration of the practicability of growing vegetables.

(5) The distribution of setting eggs and good strains of stock poultry.

(6) The encouragement of cattle keeping (See VI).

III. Cash Crops.

The adequate cultivation of the existing money crops, cloves and coconuts and the continuation of investigations directed towards improvement in the yields of both of these aided by

(1) The issue of robust clove plants derived from known parent trees and of seeds of selected high yielding palms.

(2) The provision of financial assistance for the cultivation and harvesting of cloves and coconuts through the Clove Growers Association (an organisation supported by Government).

IV. Cash Crop Trials.

The attempt to increase the number of cash crops by the establishment of exports of local oranges, kapok, pineapples and chillies.

V. Produce Quality Standards.

The improvement of the quality standards of export produce by

(1) Pre-sale examination, whenever possible, of cloves and copra under an Adulteration of Produce Decree followed by the creation, where necessary, of grades or standards for export crops.

(2) Assistance in the construction of copra kilns.

(3) The provision of field assistants for teaching and propaganda work in the field. (See VIII).

VI. Livestock.

The maintenance of the livestock of the Protectorate free from imported epidemic diseases and the development and improvement of the cattle industry by: —

(1) The use of quarantine measures for all imported cattle, sheep and goats unless accompanied by a satisfactory health certificate.

(2) The erection of cattle dips to counteract the effects of East Coast Fever.

(3) The castration of inferior males and the establishment of a stock farm from which improved stud animals may become available.

VII. Relations with Producers.

The maintenance of the closest collaboration with the Administration in all work which affects the primary producer.

VIII. Education.

(1) The need for improving the standard of technical education of field assistants employed in experimental and extension work and the value of training at Makerere for the higher posts in the subordinate technical staff.

(2) The maintenance of an adequate staff of trained subordinates as a link between experiment stations and the public. This class of employee will be recruited from youths trained at the Rural Middle School, Dole, so far as that may be practicable.

(3) Collaboration with the Education Department directed towards making as much use of gardens as is possible at rural schools. It is in the interests of the pupils to grow food and fruit for consumption and such economic crops as can be conveniently cultivated in small lots by small boys for the benefit of their school funds.

SECTION I.

AGRICULTURE IN THE PROTECTORATE.

GENERAL.

The clove crop of the 1938-1939 season was the smallest recorded since 1910-1911, but, following on the record crop of over thirteen and a half lakhs of frasilas gathered during the previous season, this small yield was not unwelcome as at the same time as we had been gathering in our bumper crop in 1937-1938 Madagascar had also exceeded all previous production of cloves by exporting some 4,500 tons, which really meant that a two-year's world demand had been harvested in one year.

This over-production, coupled with the fact that, since the Clove Growers' Association had purchased the Protectorate clove crop in 1937-1938, consumers had ceased stocking their wonted six months supply, had resulted in the world's excess stocks being held in Zanzibar so that until the end of the season in June 1939 and afterwards until the outbreak of war the outlook for the export of these surplus stocks was far from bright.

The onset of hostilities found all overseas' clove markets practically denuded of supplies and this fact, coupled with the negligible crop available for export from Madagascar, resulted in an export of 843,956 frasilas, being shipped from the Protectorate during 1939 the largest figure ever recorded and of this total 551,204 frasilas were exported after September 1st.

"SUDDEN DEATH" IN CLOVE TREES.

Dr. A. H. Campbell, the Plant Pathologist, appointed by the Secretary of State for the Colonies under the free grant from the Colonial Development Fund to investigate the causes of the disease known as the "Sudden Death of Clove Trees", having completed his investigations in the Protectorate, left Zanzibar in August.

His report, which, it is expected, will be available shortly, is awaited with extreme interest and while it is probably too much to expect that Dr. Campbell may have found a universal panacea for the control of the disease, his investigations, and those of Messrs. Milne, Glover and Nutman of the East African Agricultural Research Station at Amani who were seconded to Zanzibar by the Director of the Institute from time to time to assist Dr. Campbell, may well demonstrate that, as has often been the case in the past in other parts of the world, the improvement of cultural conditions generally may go a long way towards reducing the losses caused by disease.

COPRA.

Until the last few weeks of the year, 1939 was perhaps the blackest period ever experienced by copra producers in the Protectorate and for the most part the expesnses of collection of the nuts and the manufacture of the copra therefrom left no margin for ordinary cultivation expenses. The difference in price between the best quality copra and the worst was insufficient to attract producers to manufacture a high grade product.

Under such circumstances and in view of the fact that by far the greater proportion of the trade is in the hands of small people with very limited resources it was considered impracticable to carry on with the "better-copra" campaign.

The better prices realized at the close of the year led to an immediate renewal of interest in the preparation of an improved product and if these better prices are maintained a rapid and marked appreciation in the quality of Zanzibar copra may be confidently anticipated.

EXPERIMENTAL WORK.

One of the commonest criticisms of research work in all branches of the colonial service is that the value of the new knowledge acquired is not always made available in a practical manner to that part of the public which is interested-in the case of agriculture-the producer. To ensure that the results of the investigations made at the Kizimbani Experimental Station should be available to peasants throughout the Protectorate, two seed stations have been opened during the year at Mkwajuni in Zanzibar and at Limbani in Pemba where the planting material which has proved most successful at Kizimbani is multiplied and then issued to peasants. Already very many thousands of cuttings of sweet potatoes (introduced from the British West Indies), cassava (a local selection which appears highly resistant to mosaic disease) and several tons of superior seed maize have been distributed through these seed stations, which are also used to demonstrate new crops which are beyond the experimental stage. Amongst the latter are the Oyster Nut (a native of Zanzibar which has practically disappeared from the Protectorate) and the small red pepper which is locally known as the "pilipili hoho".

The search for new export crops proceeds and apart from pineapple canning which is discussed later in the report it is considered that the time has now arrived for large scale commercial trials of the small red Zanzibar chilli and the small seeded local caster oil.

PINEAPPLE CANNING.

As mentioned in last year's report a small experimental trial of canned pineapples was made towards the close of 1938 and at the beginning of 1939. The bulk of the cans were despatched to England for a report as to the commercial possibilities of the fruit and juice.

While opinion was almost universally in agreement that the prospects of the canned juice were poor, it was generally held that the canned slices had distinct possibilities and these prospects have been enhanced since the outbreak of war has created difficulties in the purchase of canned fruit of foreign origin.

Acting on advice from home a further 5,000 cans are being processed at present and from the results of this experiment it is hoped that some definite proposal for the institution of a pineapple canning industry may be forthcoming.

THE STOCK INDUSTRY.

Although the visible results of the Veterinary Officer's work towards the development of the stock industry may still be small, a great deal of spade work has been accomplished in getting in touch with stockowners and in acquiring their confidence.

Two veterinary assistants were stationed in Pemba during the year and by their regular tours throughout the cattle districts have obtained a close insight into the conditions under which cattle are maintained in that island. Their work has made it apparent that in certain parts of Pemba the improvement of the cattle industry will to a considerable extent depend upon the improvement of the pasturage.

A start has been made with the castration of the undesirable male stock and it is anticipated that, now the conservative attitude of the stockowners is being broken down, the number of castrations will show a very decided increase by the end of 1940.

During the year the Colonial Development Fund expressed their very practical approval of the possibility of developing a small cattle industry in the Protectorate by a grant of £5,170 which will be free of interest for a period of ten years after which the possibility of repaying the loan through the increase of prosperity accruing from the improved stock position will become a matter for consideration.

VEGETABLES.

A large scale trial of vegetables production was commenced during the year and it was ascertained that for approximately 6-8 months regular supplies of the following vegetables could be produced economically in Zanzibar :—

Names of Vegetables.	Whence Imported.	Varieties.
Artichokes	Local	Jerusalem.
Beans-Bush	W. Atlee Burpee & Co., U.S.A.	Bountiful.
,, ,,	Simpson & Whitelaw, Ltd., Nairobi	Canadian Wonder.
,, ,,	F. Kirchoff & Co., Ltd., Johannesburg	French Dwarf.
Beans-Runner	,, ,, ,, ,,	Pole Runner.
Beetroot	Simpson & Whitelaw, Ltd., Nairobi	Crimson Globe.
,,	W. Atlee Burpee & Co., U.S.A.	Burpee's Red Ball, Crosby's Egyptian, Detroit Dark Red.
Cabbage	Simpson & Whitelaw, Ltd., Nairobi	Drumhead.
,,	Sutton & Sons, Calcutta	Pride of India.
,,	W. Atlee Burpee & Co., U.S.A.	Succession.
Cauliflower	Sutton & Sons, Calcutta	Early Benares, Early Market, Early Patna.
Celery	F. Kirchoff & Co., Johannesburg	—
Christophine	Kenya	S. T. W.
Cucumber	Local	Local.
Egg Plant	Sutton & Sons, Calcutta	Improved.
Gourd	Ceylon	Snake Gourd
Kohl Rabi	Simpson & Whitelaw, Ltd., Nairobi	Large Green.
Lettuce	,, ,, ,, ,,	Early Paris Market.
,,	W. Atlee Burpee & Co., U.S.A.	Mignonette.
Ochro (Hibiscus esculentus)	Local & Barbados	Local.
Sweet Pepper	W. Atlee Burpee & Co., U.S.A.	Bull Nose, California Wonder, King of the North.
Garden Peas	Simpson & Whitelaw, Ltd., Nairobi	Alderman.
,, ,,	Mauritius	Mauritius.
Potatoes	Kenya Colony	English.
Pumpkins	Local	Local.
Radish	Simpson & Whitelaw, Ltd., Nairobi	French Breakfast, Scarlet Gem.
Squash	Barbados, B. W. I.	Barbados.
Sweet Potatoes	,, ,,	B. 44, Caroline Lea, V. 52.
Tomatoes	W. Atlee Burpee & Co., U.S.A.	Break-O-day, Marglobe, Ponderosa.
Turnips	Sutton & Sons, Calcutta	Early Snowball.
,,	Simpson & Whitelaw, Ltd., Nairobi	Purple Top White, Globe.

The trial is continuing.

At the Horticultural Exhibition on September 7th, the Department staged an exhibit of 48 different vegetables and varieties which proved a great attraction to the public generally.

FOOD CROPS.

When it became apparent that the clove crop of 1938-1939 was unlikely to be of any considerable size the people of their own accord increased very considerably the land under preparation for food crops and this increase received a great impetus at the crisis in September, 1938.

Government decided in view of the unsettled state of international affairs and in view also of the poor clove harvest that one of the most solid planks in its agricultural policy should be the production each year of a maximum quantity of local foodstuffs and provided, where necessary, free issues of good quality seed of maize, rice and cowpeas.

The officers of the Administrative Department have collaborated most effectively with the personnel of this department in encouraging producers to plant more food and aided for the most part by favourable weather until late in the year a very considerable proportion of the country people's food supply was produced in the Protectorate.

When times are good, the people make rice the staple of their diet and for this purpose approximately 17,000 tons are imported each year. If this volume were produced locally it would require an extra 75,000 acres of rice being planted annually in the swamps (as the production of hillrice is too speculative to be recommended) and it is doubtful if more than 20% of the extra land is available, so that during prosperous years we shall still be largely dependent on imported rice. In lean periods the poorer classes depend more on cassava which, although not favoured by the medical authorities as a high quality foodstuff from the nutritional point of view, will nevertheless continue to be widely planted as, whatever the weather, it can be relied upon to give a fair yield whereas crops possessing possibly a higher food value such as sweet potatoes do not possess the drought resisting powers of cassava.

POULTRY.

During the year certain progress has been made with the replacement of the entire male poultry population of different villages by selected Rhode Island cocks but it is yet too early to state whether this method will prove more successful in improving native poultry than the irregular issue of single cocks and sittings of eggs.

Five sittings (60 eggs) of especially selected Rhode Island eggs were received by air from England in August but, owing presumably to the vibration of the engines of the aeroplane bursting the air sacs only three chickens, a cockerel and 2 pullets hatched out. These birds, however, are now almost full grown and should prove a valuable addition to our breeding stock.

Very considerable mortality amongst young birds has been experienced in the past in the rearing pens and during the last four months all chicks have been kept in pens on wire-netting floors from 12-14 weeks after hatching. It is anticipated that by this means a much higher proportion of birds will reach maturity than hitherto.

The output of eggs from the breeding pens at the Experiment Station had for sometime proved extremely unsatisfactory and an examination of the ration being fed to the birds resulted in a new ration being introduced which has proved very successful.

The ration is made up as follows :—

Mash.		Parts by Weight.
Bran-blood mixture	...	4
Maize meal	...	1
Millet meal	...	1
Sim Sim meal	...	1
Salt	...	1%

One ounce of grain per bird is fed in the morning, two ounces per bird of the mash, weighed dry, and mixed with sufficient water to cause it to adhere in a ball when squeezed in the hand (without the exudation of water) is fed at 10 a.m., and a further one ounce of grain per bird is given in the evening. The protein content of the ration is somewhat higher than is considered necessary in temperate climates. Alternate feeds of millet, maize and sorghum form the grain ration.

The blood-bran is prepared at the Municipal Slaughter House by soaking trays of bran in fresh blood and the mixture is dried in the sun forming a sweet friable feed.

The following figures for three pens of 8 birds fed on this mixture at Limbani Seed Station at Pemba are of intrest :—

	Eggs Laid.	Laying Birds.	Eggs per Bird.
September ...	460	24	19.1
October ...	361	24	15.0
November ...	407	24	17.0
December ...	447	24	18.6
Average ...	419	24	17.5

FRESH FRUIT.

PINEAPPLES.

Towards the end of 1938 a small shipment of fresh pineapples was made to Bombay. The fruit arrived in excellent condition but the packing and transport costs proved so great that the development of the trade is a highly speculative matter, as the losses which may be normally anticipated in the shipment of fresh fruit (and which were not in evidence in the trial shipment) would account for more than any profit which might be expected from the trade.

ORANGES.

In February and March an officer of the Department was enabled to visit Colombo, Madras, Calcutta and Bombay to study the possibility of developing a trade in Zanzibar oranges in the districts surrounding those ports and as a result of his investigations it became apparent that there were distinct possibilities of developing a small trade of possibly 20,000 cases maximum capacity in India in a quality of orange which would come between the high grade orange imported from South Africa and Australia and the local Indian orange-a trade where the imported fruit could be retailed profitably at one anna.

Six trial shipments were made in June to Bombay, Madras and Calcutta and in every instance it was reported that the fruit arrived in excellent condition but its uneven colour rendered it unattractive and losses were recorded in almost all the consignments.

The importers in India considered, however, that with artificial colouring the same price would be obtained for Zanzibar oranges as for those from South Africa and Australia and Government is now considering the possible development of the trade in this direction.

FOOD CONTROL AND PRICE REGULATION.

Plans for the control of price and to ensure a steady import of essential foodstuffs had been in preparation since before the Munich crisis in 1938 and on the outbreak of hostilities these proved readily adaptable for actual practice.

For purposes of the most effective control the Protectorate has been divided into two areas (Zanzibar and Pemba), each with its own Competent Authority, but in actual practice Pemba has, of necessity, closely followed Zanzibar's lead, as all importations are made from the latter place.

A month before declaration of war, the British Resident appointed advisory committees, representative of all interests, in each island to assist the Competent Authorities in their work and these committees have proved of extreme value in ensuring that supplies are maintained at reasonable prices.

The first duty of the Price Advisory Control Board was to recommend the formation of a reserve of our staple food, namely rice. Government accepted this recommendation and arranged for a reserve of more than one month's supply (2,000 tons) to be kept.

This reserve will be periodically renewed and it is satisfactory to note that owing to the recent rise in prices the creation of the reserve will not involve Government in any expenditure.

The object of food control in the Protectorate has been to ensure that regular importations of essential foodstuffs are maintained and that the consumer is not called to pay more for his needs than the actual additional cost of importation necessitates. No attempt has been made to regulate the prices of what may be termed "luxuries".

The work of the Competent Authorities has been made easier by the fact that competition amongst traders in Zanzibar has always been intense and it may be stated that until price control was established many traders had never made a regular profit.

The first price control order was made in Zanzibar and Pemba on September 3rd and up to the present date the following orders have been published.—

Zanzibar	Wholesale	...	9
Zanzibar	Retail	...	10
Pemba	Wholesale	...	7
Pemba	Retail	...	9

At first, orders, as might have been expected, were issued at short intervals but later it was not found necessary to change prices more than once a month.

Only one commodity has been required to be rationed, namely sugar (and that to wholesalers only for a brief period in Zanzibar).

The system by which almost all foodstuffs are imported into Pemba from Zanzibar by dhows, which depending as they must, on the wind for their motive power, coupled with a period of extreme shortage of supplies in Zanzibar, resulted in a time of some anxiety, as the more ignorant and unruly elements of the population proceeded to corner all the sugar in the island.

The District Commissioner, however, in his capacity as Food Controller, Pemba, rapidily evolved an organization which effectively ensured that the sugar available was shared equitably and since then ample importations have resulted in a return to normal conditions.

It is difficult to estimate the total rise in the cost of living in the Protectorate but it is estimated the increase from the outbreak of hostilities until the end of the year was in the neighbourhood of 15%.

On the other hand the fact that Japan, Saigon and Java provide the largest proportion of our imported food can only result in the poorer sections of the community being compelled to face considerable increases in their cost of living if the war should be prolonged unduly.

Under the circumstances, the fact that Government had instituted over 12 months ago a comprehensive and very successful drive to ensure increased planting of foodstuffs is a matter for sincere congratulation.

WEATHER.

The annual average rainfall was satisfactory, but the distribution was not all that could be desired. The weather followed its usual course until May when exceptionally heavy rains were universal throughout the Protectorate—in certain instances over thirty inches of rain being recorded during the month.

After May the weather became dry and the food crops normally planted with the heavy rains, especially rice in the north of Pemba, suffered severely.

The "vuli" rains were light and disappointing and in certain parts of the Protectorate, such as at Mkokotoni in Zanzibar and in the east of Pemba, may be said to have failed. The land, except in favoured areas, remained too hard for hoeing and the area of cowpeas, gram and cassava which is usually planted at this season was much reduced.

DOMESTIC EXPORTS.

In Table I is presented a summary of the value of domestic exports compiled by the Customs Department. The total value of exports is some fifty per cent higher than that of the previous year, the bulk of the increase being due to the greatly increased volume of clove exports, the declared value of which was a fraction lower than in the previous year. Clove stem oil also contributed to the increase. Of the other domestic exports coconut oil and mangrove bark increased in volume, the value of each being down. In 1938 the collapse in the value of the coconut crop was commented upon. This year the decline has gone still further, the total value of copra, coconut oil and fresh coconuts at £87,056 comparing unfavourably with the low figure of £102,062 for 1938. The decline in value is due to lower prices.

Table I.

DOMESTIC EXPORTS, 1934-39.

Item.	Unit.	1934. Quantity.	1934. Value. £	1935. Quantity.	1935. Value. £	1936. Quantity.	1936. Value. £	1937. Quantity.	1937. Value. £	1938. Quantity.	1938. Value. £	1939. Quantity.	1939. Value. £
Cloves	Cwt.	217,514	477,663	189,771	474,513	205,687	618,671	121,128	411,654	157,203	514,964	263,736	857,582
Clove oil	Lbs.	—	—	—	—	57,633	8,645	652	98	2,581	323	—	-
Stem oil	Lbs.	—	—	—	—	4,418	663	94,617	11,723	232,937	24,043	367,536	32,876
Copra	Tons.	12,607	71,463	11,694	120,352	13,037	142,686	14,411	204,192	11,697	97,450	10,544	79,832
Coconut oil	Lbs.	68,770	435	78,875	689	167,664	1,666	109,335	1,349	323,673	2,383	785,385	5,031
Coconuts	Nos.	928,898	1,336	752,980	1,745	1,024,057	2,444	949,187	2,926	1,118,061	2,229	1,288,693	2,193
Oil cakes	Cwt.	—	—	—	—	11,955	2,124	12,828	2,849	16,998	3,586	15,528	3,068
Fruit fresh	Cwt.	7,346	1,877	7,635	2,725	—	1,911	—	1,807	—	1,924	—	2,293
Vegetables	Cwt.	127	122	313	180	264	129	158	101	90	70	264	215
Tobacco unmanufactured	Lbs.	19,275	380	43,181	684	47,650	646	27,759	316	27,765	415	22,800	543
Hides and Skins.													
Ox hides	Cwt.	780	1,058	688	775	338	465	1,186	3,135	410	1,192	292	646
Sheep and goat	Nos.	—	—	—	—	4,800	140	20,046	1,100	13,575	548	11,707	342
Other animals	Nos.	15,726	468	14,205	449	29,000	141	9,618	56	7,001	27	1,000	2
Mangrove bark	Tons	—	—	—	—	—	7,544	—	6,522	312	1,102	1,742	4,401
Total		—	554,802	—	602,112	—	787,875	—	647,828	—	650,256	—	989,024

CLOVES.

Harvesting.—The clove harvest of the year 1939 comprised both "mwaka" and "vuli" crops in both islands, the bulk of the cloves being gathered in the early part of the season in the months of July, August and September. This crop which was light in Zanzibar District was a heavy one in the south of Pemba District. The "vuli" crop, the harvesting of which commenced in December was a light one and was, for the most part confined to the north of Pemba and the north of Zanzibar in areas which, had borne little or no "mwaka" cloves. The early harvest was gathered in good drying weather and as regards the moisture content of dried cloves no complaint could be made. The general quality of the season's samples was, however, no better than fair owing to the great variation in the size of cloves which generally exhibited a variety of stages varying from buds which were not fully developed to those which had so matured as to become headless either on the tree or in the process of drying. That this condition was due to physiological causes in the trees, which caused uneven development and not to defects in harvesting or preparation of the crop could be seen from casual examination of unpicked clusters of buds which showed crop in widely different stages of maturity. This character was less marked in samples of cloves harvested towards the end of the year. Labour was not unduly hard to obtain and picking prices were at a reasonable level, seldom exceeding 15 cents of a shilling per pishi measure.

Calendar Year (1939).—The total deliveries of cloves for sale during 1939 are summarized below :—

Origin.		lbs.	Frasilas of 35 lbs.
Zanzibar	...	4,943,008	141,229
Pemba	...	16,160,845	461,738
Total	...	21,103,853	602,967

The total of 602,967 frasilas which was marketed during the year is comprised of 74,679 frasilas which were sold up to the end of July and belong to the seasonal year of 1938-1939, the balance of 528,288 frasilas falling into the crop year 1939-1940 which extends from 1st July, 1939, to 30th June, 1940.

Seasonal Year (1938-1939).—Following upon the record large crop of the previous season it was thought that the crop of 1938-1939 would not be a large one but it proved in fact to be the smallest recorded since 1910-1911.

The total deliveries of cloves for the period were :—

Origin.		lbs.	Frasilas of 35 lbs.
Zanzibar	...	1,395,774	39,879
Pemba	...	4,032,378	115,211
Total	...	5,428,152	155,090

In Appendices II and III are presented clove deliveries by seasonal years for 35 crops.

Clove Markets.—As in the year 1938 the clove market in Zanzibar Town was again fully untilsed by producers and buyers of cloves, the former sending their produce to this market for inspection and weighing, and subsequently selling for the highest price offered. In the Pemba townships clove markets were not used in this manner, the producers sellings cloves direct to buyers at the latters' premises and the inspection of the cloves, under the Adulteration of Produce Decree, taking place in the usual manner at Pemba ports.

Inspection.—Inspection of cloves for excessive moisture and extraneous matter was continued, as has become customary, in the clove market at Zanzibar and at the ports of Wete, Chake Chake and Mkoani in Pemba. Additional facilities were made available to the public in Pemba during the period by the utilization of the clove market in Wete for the inspection of merchants cloves and by the transfer of the inspection shed at Chake Chake to a site close to the dhow anchorage which was convenient to merchants.

The figures which appear below present a summary of the results of inspection of cloves in Zanzibar Town under the Adulteration of Produce Decree and include produce drawn from Zanzibar District as well as that reinspected on arrival from Pemba. Of the cloves of Pemba origin approximately 14% had been failed previously at Pemba ports. As in previous years all failed cloves were passed after drying or reconditioning.

TABLE II.

EXAMINATION OF CLOVES UNDER THE ADULTERATION OF PRODUCE DECREE, 1934.

Origin.	Delivered (bags).	Passed (bags).	Failed. Excess Moisture (bags).	Failed. Extraneous Matter (bags).	% Failures.
Zanzibar ...	45,388	41,098	2,778	702	8
Pemba ...	143,205	139,688	2,245	1,272	2
Total ...	188,593	181,596	5,023	1,974	4

The examination of clove stems for excessive moisture and extraneous matter was continued, 14% of Zanzibar and 15% of Pemba origin being failed on first inspection. The comparative figures for 1938 were 11% and 26%.

Declared Buying Prices.—Declared buying prices published under the authority of the Clove Growers Association Decree (Cap. 118) varied throughout the year as is shown below :—

PRICE RANGE IN SHILLINGS PER 100 lbs.

General Notice No.	District.	Quality. Good.	Fair.	Poor.	Inferior.	Sweepings.	Clove stems.	Inferior clove stems.
In force from 1st January to 30th June.	Zanzibar	51.00	44.50	36.00 to 40.00	30.00 to 35.00	12.00 to 20.00	7/-	3.00 to 6.00
	Pemba	50.10	43.60	35.10 to 39.10	29.10 to 34.10	11.10 to 19.10	6/50	2.50 to 5.50
In force from 1st July to end of year	496 of 30.6.39 Zanzibar	37.50	35.00	29.00 to 33.50	24.00 to 28.00	10.00 to 15.00	6/50	3.00 to 6.00
	Pemba	36.60	34.10	28.10 to 32.60	23.10 to 27.10	9.10 to 14.10	6/-	2.50 to 5.50

In the early months of the period when exports were not heavy and clove deliveries were light the greater part of clove purchases were made by the Clove Growers Association at the declared prices, most of the crop being rated as fair quality. Throughout the last quarter of the year local export houses bought fair quality cloves in the local market at prices substantially above the declared buying price, and during the whole year they disregarded quality and purchased all cloves at the flat rate which was being paid currently.

For all qualities the average price paid by the Association during the year was Shs. 34/90 per 100 lbs.

Exports.—The table below shows the destinations of cloves exported during the past four years and also the declared average value per 100 lbs. The volume of exports during the year was without precedent, the start of hostilities between the British Commonwealth and Germany bringing a rush of orders due to three principal causes. The first was a shortage of supplies in Madagascar, the second a general desire to hold adequate stocks, particularly by Indian and Javanese buyers in view of possible shipping dislocation resulting from the start of the war. These buyers had for some time been purchasing Zanzibar cloves as required and holding few stocks themselves. The third cause was speculative buying, towards the end of the year, by merchants who believe that there would be an increase in the import duty of cloves into India.

Table III.

CLOVE EXPORTS FOR THE CALENDAR YEARS, 1936, 1937, 1938 AND 1939.
(In standard bales of 140 lbs.)

Destination.	1936.	1937.	1938.	1939.
Dutch East Indies ...	80,451	56,856	74,490	93,429
India ...	51,221	11,699	28,047	65,194
United States of America ..	15,542	13,539	14,215	26,336
Great Britain ...	5,303	8,739	3,293	17,341
Germany ...	2,613	8,109	—	1,751
Straits Settlements ...	—	—	550	807
All Other Ports ...	9,419	7,960	5,165	6,131
Total ...	164,549	96,902	125,760	210,989
Declared value per 100 lbs. weight in shillings and cents ...	53.51	60.69	58.50	58.06

The export of clove stem oil increased by fully fifty per cent over the previous year, examination and certification of samples being conducted by the Government Chemist as in previous years. The volume and destination of exports is tabulated below :—

CLOVE STEM OIL EXPORTS, 1939.

	Lbs.
Great Britain ...	344,139
Australia ...	11,365
United States of America ...	4,876
France ...	4,340
Holland ...	2,161
Palestine ...	666
Total ...	367,547

Export Grading.—During the period some changes in the descriptions of export grades of cloves were brought into force and the Intermediate and Technical grades were abolished. The position is summarized in Section IV, Agricultural Legislation. Formerly only Grade I cloves were available for export to the Indian Market, and when supplies were short in 1938 a grade known as Intermediate was created. During the period under review the export of Grade II cloves to India was permitted and, as a result, it was found unnecessary to retain provision for the export of Intermediate Grade as no orders were placed after the export of Grade II was allowed. The tables which follow summarize the results of grading by months and by grades :—

Table IV.

INSPECTION AND GRADING OF CLOVES FOR EXPORT, 1939.

Month.	Bales of 140 lbs. Nett.
January ...	14,014
February ...	3,104
March ...	10,495
April ...	4,378
May ...	11,013
June ...	6,410
July ...	2,284
August ...	21,490
September ...	40,574
October ...	32,163
November ...	32,403
December ...	32,661
Total ...	210,989

TABLE V.

GRADES OF CLOVES EXPORTED, 1939.

Special Grade. Bales.	Grade I. Bales.	Intermediate Grade. Bales.	Grade II. Bales.	Grade III. Bales.	Technical Grade. Bales.
...	41	3,153	185,742	20,553	1,500
...	0.02%	1.50%	88.03%	9.74%	0.71%

COCONUTS.

General.—The year was once more a difficult one for the coconut grower, and although the crop of coconuts, copra, and oil expressed in terms of nuts approximated to that of 1938 the total value of the crop was less than one half of that of 1938 which was also a poor year. Although the average price of copra sold from the Government Plantations was Shs. 6-49 per 100 lbs. compared with Shs. 6-28 in 1938, and Shs. 10-62 in 1937, the average price received by producers would be much lower as a large proportion of the copra sold from the Government Plantations was disposed of in the last two months of the year when prices were as much as Shs. 3/- per 100 lbs. above the average of the first three quarters of the year. The copra produced in Government Plantations is much superior to the product manufactured by all except the most progressive copra makers. The export of coconut oil once more increased substantially.

With prices as low as they were for the greater part of the year, there was a tendency to neglect the crop and in some areas the customary quarterly picking of nuts was not made during the third quarter. A number of copra manufacturers also allowed their kilns to fall into disrepair. There was a slight increase in the export of fresh nuts from Pemba to Zanzibar the greater part of the trade being conducted by one dealer. The objection to this traffic is that the nuts are transported by dhow after the removal of the husk and are frequently exposed to the sun for some time before purchase by a copra maker in Zanzibar. As a result of this exposure many of the nuts burst open and the kernel begins to develop a heavy mould growth which produces inferior copra.

Figures showing the numbers of nuts shipped from Pemba to Zanzibar for the past four years are given below :—

COCONUTS EXPORTED FROM PEMBA TO ZANZIBAR.

Year.		No. of Nuts.
1936	...	6,259,000
1937	...	4,167,000
1938	...	751,000
1939	...	921,925

The start of the war produced some increase in the price of the commodity but difficulties in obtaining shipping space and increased ocean freight may tend to reduce the full extent of the price gain.

Inspection.—The pre-sale examination of copra under the Adulteration of Produce Decree was continued throughout the year, the figures below summarizing the results of inspection in Zanzibar.

TABLE VI.

EXAMINATION OF COPRA IN ZANZIBAR TOWN DURING, 1939.

Origin.		No. of bags delivered.	No. of bags Passed.	No. of bags failed for Moisture.	No. of bags failed for Extraneous Matter.	% Failures.
Zanzibar	...	152,266	142,723	2,330	7,213	6
Pemba	...	77,160	76,733	350	77	Nil
Total	...	229,426	219,456	2,680	7,290	4

Of the above copra 10,248 bags or eleven per cent of Pemba origin had been examined, failed and subseqeuntly reconditioned at Pemba ports.

The proportion of copra classified by method of manufacture is listed below :—

		%
Smoke dried	...	55
Sun dried	...	25
Kiln dried	...	20

In contrast with comparative figures for the previous year there has been some reduction in kiln and sun drying and an increase in the type described as smoke dried. Although the purity of the commodity was maintained, there was some recession in quality, a number of the smaller copra manufacturers reverting to the use of kilns which produced a smoked compared with a white copra. This relapse was due to economic causes, the copra makers being unable to maintain in good order kilns designed to produce white copra which had been constructed in the more remunerative years of 1936 and 1937.

Export.—The total copra exported was 10,544 tons which is a reduction compared with the previous year. The distribution of exports is shown below :—

TABLE VII.

COPRA EXPORTS, 1939.

Destination.		Quantity in tons.
France	...	8,141
Italy	...	1,205
Great Britain	...	541
Holland	...	241
Union of South Africa	...	197
Germany	...	99
Egypt	...	96
Kenya Colony	...	12
Mauritius	...	10
India	...	2
Total	...	10,544

OTHER EXPORT CROPS.

Fruit.—The value of the fruit crop exported was Shs. 45,860 compared with Shs. 38,480 during the previous year. The possibilities of extending this minor industry by the creation of a trade in oranges to India have been mentioned earlier in this report.

Tobacco.—This small crop which is chiefly exported to Somaliland diminished in volume but increased in value compared with the previous year, the figures being 22,800 lbs. and Shs. 10,860 for 1939, and 27,765 lbs. and Shs. 8,300 for 1938.

Mangrove Bark.—Bark cutting was carried out more extensively than formerly, the export of 34,840 cwts. valued at Shs. 88,020 being an increase in volume of 28,596 cwts. and in value of Shs. 65,980 compared with 1938, the price per cwt. being slightly less than in the previous year.

VETERINARY.

The number of livestock slaughtered in Zanzibar Town during the years 1936, 1937, 1938 and 1939 is tabulated below :—

TABLE VIII.

ANIMALS SLAUGHTERED AT MUNICIPAL ABATTOIR, ZANZIBAR.

	Species.		1936.	1937.	1938.	1939.
Imported Stock.	Cows	...	151	...	44	...
	Oxen	...	1,381	1,327	1,912	1,297
	Calves	...	10	...	...	1
	Goats	...	5,302	5,236	6,627	3,152
	Sheep	...	1,359	2,412	3,030	2,907
Local Stock.	Cows	...	581	902	290	491
	Oxen	...	218	348	57	289
	Calves	...	101	132	42	98
	Goats	...	3,652	2,804	1,819	3,566
	Sheep	...	...	...	...	...

The extent to which meat is consumed in Zanzibar is a useful index of the prosperity of the people, the majority of whom eat meat readily when their finances permit of it. The general reduction in the number of stock slaughtered during the period is, however, complicated by the fact that there was an embargo, due to disease, in the import of cattle from Lamu during a part of the year and for practically the whole year the import of goats through Lamu was prohibited.

Disease.—There was an outbreak of rinderpest amongst slaughter stock imported from Kenya but this was confined to the quarantine area. Contagious pneumonia of goats, also brought in by imported animals, spread beyond the quarantine station but was localized and dealt with by isolating the area.

Fowl typhoid occurs at irregular intervals. During the year outbreaks occurred but considerable use was made of a vaccine kindly supplied by the Kenya Veterinary Authorities.

Veterinary Education.—The Veterinary Officer continued with the coaching of subordinate staff for the Department of Agriculture, and also assisted the Public Health Department by training Sanitary Inspectors in meat inspection.

It was found possible to station in Pemba two youths, trained by the Veterinary Officer. Their duties consisted of making contact with local stock owners and endeavouring to enlist their interest in animal husbandry. By the end of the year some cattle had been castrated in Pemba and a large number of fowls inoculated against fowl typhoid.

These two activities which have been conducted successfully in both Districts will tend to become a routine activity of the subordinate staff now that the confidence of the people has been gained.

SECTION II.

WORK OF THE DEPARTMENT OF AGRICULTURE.

GENERAL.

Agricultural Education.—The training of nine field assistants for departmental duties was continued throughout the year. Of these one was seconded to the Government Chemist, two to the Veterinary Officer, one to the Produce Inspector, and five were in residence at the Experiment Station. At the year's end three, who had completed their training, were appointed Agricultural Assistants.

As before, much time was spent upon the copra maker by members of the District extension staff. It was also possible to begin work amongst cattle owners as has been mentioned earlier in the report.

Two small seed stations, at each of which pens of Rhode Island Red poultry were maintained, were opened, one in Zanzibar and one in Pemba, and large quantities of cassava and sweet potato cuttings, rice, maize and other seeds issued to cultivators who have taken a great interest in this activity.

EXPERIMENTAL WORK.

CLOVES.

Nursery Work.—The supply of clove seedlings from District nurseries was continued in both islands, two nurseries in Zanzibar being abandoned and two new ones constructed.

Clove seedlings were issued as follows:

Zanzibar	...	43,000
Pemba	...	45,800
Total	...	88,800

At a number of nurseries seeds of Liberian coffee were planted to supply a local demand.

No increase was made in the number of trials with the clove, but the records of existing experiments were maintained. A block of clove seedlings derived from the high yielding trees referred to in the report for 1938 was planted in rows containing 38 plants of each high yielding parent.

COCONUTS.

Seed Selection.—The establishment in nurseries of seed from high yielding palm trees was continued and planting up of a block of palms derived from high yielding parents was commenced. The extent of seed selection was increased by taking in a further number of promising parent trees.

OTHER PERENNIAL CROPS.

Kapok, Oil Palms and Liberian and Excelsa Coffees continue to make satisfactory headway, the two former producing small crops on individual trees in the course of the year.

ANNUAL CROPS.

Maize.—White Maratha maize, a good strain of which had been developed locally, continued to be issued to the public while observations were made upon three yellow varieties namely Funks Yellow Dent, Peruvian and Durum.

Cassava.—Trials of cassava immune or highly resistant to mosaic diseases were continued, the work having now assumed a standardized form which consist of three stages, the first being the planting of new importations in observation

plots and the summary rejection at harvest of poor yielders, susceptible varieties, and cassavas of poor flavour. The second stage consists in planting between hedges of heavily diseased cassava those varieties which have been retained in the preliminary selection. Planting is done in randomised blocks the local variety "Msitu" being used as a standard control. At this stage a further series of rejections takes place. The final stage consists in carrying into a variety trial the best selections and testing them against "Msitu".

During the period 20 varieties in observation plots were reduced to twelve by the discarding of Bäsiorao, Binti Athman, Binti Minsi, Kimtongani, Mangi, Mbega, Numbu and White Stick on account of disease and poor yield.

From the mosaic resistance trials in which eighteen varieties were tried 8 others were discarded these being E.20, F.64, Kajayeye, Kijiti, Msheli, Pamba Mangulu and Sareso.

The previous paragraphs relate to cassava varieties planted during 1938 and harvested in 1939; similar trials with varieties planted during 1939 were initiated.

Sweet Potatoes.—Early in 1938 a number of varieties of sweet potatoes were introduced from Barbados where they form the staple food of the mass of the population and where, in consequence much work has been done by the local Department of Agriculture in improving yield and quality.

When sufficient planting material had been accumulated a variety trial consisting of the three best Zanzibar varieties (Halimtumwa, Toto and Kichoni) and seven introduced varieties was laid down in six randomised blocks, the plot size being 1/60 acre.

The trial was planted in October, 1938, and reaped at the end of March, 1939, and five of the Barbados varieties proved the heaviest yielders of which B.44, B.52 and Six Weeks were significantly better than any of the others. Close behind them was Caroline Lea a potato of exceptional quality and possessing the yellow colour recommended by the Medical Authorities for its vitamin content.

As a result of the trial the varieties, Caroline Lea, B.44 and B.52 were subsequently multiplied for distribution and by the end of 1939 several hundred bags of cuttings had been distributed to peasant farmers.

Late in the year a few tubers of 5 new varieties of sweet potatoes were received from Amani and multiplied.

Rice.—A 6 × 6 Latin Square variety trial was laid out in April, the following varieties being used :—

Cheche	(Local)	N. 14	(Sierra Leone)
Irumbe	(Comoro)	Sena	(Local)
M. K. 3.	(Malaya)	S. K. 36	(Malaya)

It was decided to discard all except Cheche and N.14 for future work,—the Malayan varieties for their longer period of maturity which is a disadvantage when the crop is dependent upon rainfall as is the bulk of the rice grown locally. The other varieties were discarded for low yields.

Seven varieties were also grown in observation plots, two, Afaa (Local) and N.90 (Sierra Leone), being retained for further trials, while Ambari (Tanganyika) Ambari (Local), N.66 (Sierra Leone) and Rey (Malaya) were discarded.

Peppers.—Approximately half an acre of the local small podded chillies was planted out in June seedlings having been raised in nursery beds. The plot made good headway and harvesting was begun in October. The chillies were picked dead ripe and sun dried on mats, yielding about 35% of dry to raw fruit of a good bright colour. A shade dried sample was dull and much less pleasing in appearance. Harvesting was still in progress at the year's end.

Legumes.—Seven varieties of cowpeas (Vigna Spp.) were on trial at the year's end. It is customary for local cultivators to purchase their cowpea seeds from the shops which sell their food and under these circumstances it will not readily be possible to keep selected strains pure in native cultivations as crossing takes place freely.

The following twelve varieties of soya beans were grown in observation plots :—

Variety.	Received from.	Variety.	Received from.
R.H.6	Nyasaland	Uganda Local	Uganda
R.H.10	,,	Barberton Variety	,,
Barberton Green	,,	R.42	,,
,, Yellow	,,	R.184	,,
O.I.	,,	Palmetto	,,
Ami	,,	Icta (Venezuela Variety)	,,

The soil, from plots on which Barberton Yellow variety had been grown in 1938 after the plot had been treated with a strain of Rhizobium, was used to inoculate the new plots and 9 varieties produced seeds, Barberton Green, R.42 and R.184 failing to germinate.

Of the pegeon peas imported in 1937, only one variety, namely Pusa No. 69, was retained.

Vegetables.—Excellent results were obtained with a wide range of vegetables in the cool weather which extends from April to September approximately and small trial plantings of a large selection of vegetables were commenced at regular intervals throughout the hot dry season which extends from October of one year to March of the following year.

TERMITES.

For some years termites have been the cause of losses amongst crops, clove plants as old as four years having been ring barked and destroyed.

In an attempt to control them or at least to reduce their activities a systematic search for nests and the destruction of queens has been carried out from April until the end of the year. A few labourers provided with picks and mattocks made regular searches and destroyed 2,930 queens at a cost of 10 cents of a shilling per queen.

POULTRY.

The position regarding poultry has been summarized in Section I of this report. The results of the feeding of the new ration, which was tried out on 24 fowls in Pemba, were superior to results in the Experiment Station in Zanzibar where another mash in which coconut meal instead of simsim meal was used.

In the course of the period 3,717 eggs were sold for setting and 410 cockerels and pullets either sold or distributed free.

GOVERNMENT PLATATIONS.

The report of the Manager of Plantations forms Appendix IV. The year was a poor one from the points of view of both clove and coconut crops and also of copra prices but nevertheless by the exercise of economy revenue slightly exceeded expenditure.

OTHER WORK OF THE DEPARTMENT.

Chemical Work.—The report of the Government Chemist appears in Appendix V.

It had been apparent for some time that the agricultural work being performed at the Chemical Laboratory did not warrant the employment of a full time chemist and, therefore, although the Government Chemist continued to supervise the work and was available for the more important observations, he was seconded for work as Municipal and Land Officer, to assist in the Secretariat, and, to act as Commissioner of Debt Settlement for practically the whole year.

Public Gardens.—The Superintendent of Gardens maintained in pleasing order the public grounds in the neighbourhood of Zanzibar.

SECTION III.

FINANCIAL STATEMENT.

The expenditure and revenue of the Department for the year are summarized below, no deductions having been made for the services of the Manager of Government Plantations who was again seconded to the Debts Settlement Administration for the whole period and for those of an Agricultural Officer seconded to the Education Department.

EXPENDITURE.

Item.		Amount. Shs.	Cts.
Personal Emoluments	...	260,785	99
Other Charges	...	226,730	92
Special	...	22,286	50
Passages	...	13,722	46
Colonial Development Fund	...	22,297	51
Total	...	545,523	38

REVENUE.

Item.		Amount. Shs.	Cts.
Sale of cloves	...	51,383	22
Sale of copra and coconuts	...	81,638	71
Miscellaneous sales	...	8,979	29
Produce Inspection Fees	...	17,988	50
Chemical Laboratory Fees	...	572	75
Total	...	160,562	47

Expenditure has increased slightly compared with the previous year and revenue has contracted, the reduction being due to lower receipts for cloves and copra.

Two Government Plantations and a portion of a third, all in Zanzibar, were sold for Shillings 85,190.

SECTION IV.

LEGISLATIVE CHANGES AFFECTING AGRICULTURAL INDUSTRIES AND FOOD CONTROL.

AGRICULTURAL LEGISLATION.

	Reference No.	Title.	Date of Introduction.
1.	Government Notice No. 2 ...	The Diseases of Animals (Importation of Dogs) Order, 1937 ...	3.1.39
2.	Government Notice No. 7 ...	The Diseases of Animals (Prohibition of Importation of Cattle, Sheep and Goats) Order, 1939 ...	9.2.39
3.	General Notice No. 135 ...	Under the Clove Decree No. 9 of 1938 ...	25.2.39
4.	Government Notice No. 13 ...	The Diseases of Animals (Declaration of Diseases) Order, 1939 ...	7.3.39
5.	General Notice No. 164 ...	Under the Diseases of Animals Decree (Cap. 128) ...	11.3.39
6.	Government Notice No. 19 ...	The Diseases of Animals (Prohibition of Importation of Sheep and Goats) Order, 1939 ...	25.3.39
7.	Government Notice No. 27 ...	The Diseases of Animals (Prohibition of Importation of Goats) Order, 1939 ...	25.4.39
8.	Decree No. 9 of 1939 ...	The Land Alienation Decree No. 9 of 1939 ...	17.6.39
9.	Decree No. 10 of 1939 ...	The Clove (Amendment) Decree No. 10 of 1939 ...	17.6.39
10.	General Notice No. 496 ...	Under the Clove Growers Association Decree (Cap. 118) ...	1.7.39
11.	General Notice No. 516 ...	Under the Diseases of Animals Decree (Cap. 128) ...	8.7.39
12.	Government Notice No. 54 ...	The Clove Grading and Export (Amendment) Rules, 1939, under the Agricultural Produce Export Decree (Cap. 116) ...	19.7.39
13.	Government Notice No. 82 ...	The Diseases of Animals (Prohibition of Importation of Goats) (Amendment) Order, 1939 ...	2.9.39

FOOD CONTROL LEGISLATION.

Under the Defence Regulations, 1939, the Director of Agriculture was appointed Competent Authority in the Zanzibar District for the purposes of Regulation 49 relating to the control and requisitioning of food and the following Government Notices were issued during the year :—

	Zanzibar.	Pemba.
The Defence Household Commodities Control (Wholesale Supply) Orders, 1939 ...	9	7
The Defence Household Commodities Control (Retail Prices) Orders, 1939 ...	10	9

These notices relate to the miximum prices, both for Wholesale and Retail, above which certain articles of food, etc., shown in the Schedule, may not be sold by merchants.

Government Notice No. 2.—Forbids the importation of dogs from Tanganyika Territory unless accompanied by a certificate of health from the Veterinary Officer. This is to ensure protection from rabies.

Government Notice No. 7.—Prohibits the importation of cattle, sheep or goats from Lamu in the Protectorate of Kenya. This prohibition was imposed as a result of outbreaks of Rinderpest and contagious pneumonia at Lamu, one of our chief sources of supply of slaughter stock.

General Notice No. 135.—Suspends the prohibition of exportation of cloves of Grade II to India and other destinations from 21st February to 30th June, 1939.

Government Notice No. 13.—Declares infectious pneumonia and contagious pneumonia to be diseases for the purposes of the Diseases of Animals Decree.

General Notice No. 164.—Delimits an infected area for the purposes of the Diseases of Animals Decree. A local outbreak of pneumonia necessitated quarantine being enforced in one locality.

Government Notice No. 19.—Cancels Government Notice No. 7 and prohibts the importation of sheep or goats only from Lamu in the Protectorate of Kenya. The embargo on cattle importation was raised.

Government Notice No. 27.—Cancels Government Notice No. 19 and prohibits the importation of goats only from Lamu in the Protectorate of Kenya.

Decree No. 9 of 1939.—Repeals the Alienation of Land (Restriction and Evidence) Decree (Cap. 112) and provides for a more convenient and effective means of control over dispositions by Arabs and Africans of their Agricultural lands. Among the many changes mention may be made of the fact that Agricultural land and Agricultural Produce of an Arab or African is immune from attachment for debt.

Decree No. 10 of 1939.—Amends Section 11 of the Clove Decree No. 9 of 1938, by abolishing Intermediate grade of cloves and permits of the continuation of export of Grade II, in addition to Grade I, cloves to India. Section 12 is also amended and prescribes the uses to which cloves other than Special Grade, Grade I and Grade II may be put after exportation. The net effect of this amendment is to give power to the Clove Growers Association to restrict the quantity of Grade III cloves used for the manufacture of sulphite vanillin.

General Notice No. 496.—This notice indicates the price which the Clove Growers Association will pay for cloves in the Protectorate during the season commencing 1st July, 1939.

General Notice No. 516.—Cancels General Notice No. 164 and declares the prescribed area to be free from infectious pneumonia of goats.

Government Notice No. 54.—These Rules made under Section 5 of the Agricultural Produce Export Decree (Cap. 116) remove Intermediate and Technical Grades from the list of grades. At the same time some revision of the remaining grades is made, the present position being :—

Special Grade.—Good sound cloves which are whole, bright, bold, uniform, regular, free from mustiness and which contain not more than—

3% of stems, mother of cloves, and foreign, superfluous or inferior matter,

2% of khoker cloves,

16% of moisture.

Grade I.—Good sound cloves which are bold, reasonably regular, free from mustiness and which contain not more than—

5% of stems, mother of cloves, and foreign, superfluous or inferior matter,

3% of khoker cloves,

16% of moisture.

Grade II.—Cloves which are free from mustiness and which contain not more than—
5% of stems, mother of cloves, and foreign, superfluous or inferior matter,
7% of khoker cloves,
16% of moisture.

Grade III.—Cloves which contain not more than—
5% of stems, mother of cloves, and foreign, superfluous or inferior matter,
20% of khoker cloves,
16% of moisture.

Government Notice No. 82.—Amends Government Notice No. 27 by allowing goats to be imported from the Wazir District in Kenya.

R. W. R. MILLER,
Director of Agriculture.

APPENDIX I.

SUMMARY OF METEOROLOGICAL OBSERVATIONS, 1939.

1st Order Station. CHUKWANI, ZANZIBAR. **Non-Clove Growing Area.**

Latitude 6° 15′ S. Longitude 39° 13′ E. Altitude 69 feet. Standard time 2h. 45m. East.

Month	Atmospheric Pressure* h 8.30	Atmospheric Pressure* h 14.30	Temperature Dry Bulb 8.30	Temperature Dry Bulb 14.30	Temperature Dew Point 8.30	Temperature Dew Point 14.30	Vapour Pressure h 8.30	Vapour Pressure h 14.30	Saturation Deficit h 8.30	Saturation Deficit h 14.30	Relative Humidity h 8.30	Relative Humidity h 14.30	Total Cloud Amounts h 8.30	Total Cloud Amounts h 14.30	Number of Occasions at 8.30 h of Cloud Amounts 0	1-3	4-6	7-9	10	Rainfall Total mm.	Rainfall Total ins.	Rainfall Max fall in 24 hrs.	Rainfall Date	Number of days of Rain	Number of days of Thunder
	ins.	ins.	F	F	F	F	ins.	ins.	ins.	ins.	%	%										ins.			
January ...	29.816	29.713	81.5	87.7	75.7	75.9	.895	.904	.189	.416	83	69	5.6	3.7	0	10	9	12	0	67.1	2.64	0.79	6	10	6
February ...	29.790	29.692	82.5	90.2	75.4	77.0	.889	.933	.233	.496	79	65	5.4	5.1	0	9	6	13	0	8.6	0.34	0.19	17	4	5
March ...	29.772	29.669	80.3	86.7	75.6	75.2	.892	.883	.150	.399	86	69	7.5	6.9	0	4	5	15	7	211.6	8.33	2.34	8	13	10
April ...	29.840	29.751	79.0	83.7	75.7	76.3	.898	.915	.100	.249	90	79	6.9	6.5	0	7	3	12	8	95.2	3.75	1.03	8	17	9
May ...	29.902	29.825	76.6	80.2	73.9	74.8	.845	.871	.079	.171	91	84	7.6	6.8	2	4	0	11	14	685.0	26.97	4.41	17	25	3
June ...	29.985	29.914	75.7	79.8	71.4	70.0	.777	.738	.121	.290	87	72	4.9	5.4	2	12	4	8	4	41.9	1.65	0.64	16	9	0
July ...	29.985	29.914	74.8	80.0	70.7	69.6	.759	.729	.112	.305	87	71	4.9	4.9	0	12	8	11	0	24.9	0.98	0.90	31	2	0
August ...	30.000	29.920	74.7	79.7	71.4	70.3	.774	.747	.091	.275	89	73	5.0	4.0	0	12	7	11	1	28.4	1.12	0.63	1	12	0
September ...	29.979	29.887	76.3	81.4	72.0	71.2	.791	.771	.122	.307	87	72	5.9	3.6	0	8	9	9	4	66.3	2.61	1.41	2	8	0
October ...	29.926	29.816	79.6	84.4	73.2	72.7	.827	.809	.189	.381	81	68	5.9	3.6	0	5	9	17	0	3.3	0.13	0.08	28	4	0
November ...	29.858	29.754	82.3	86.0	75.6	75.7	.892	.898	.218	.354	80	72	5.6	5.5	0	7	7	15	1	105.9	4.17	1.10	29	16	6
December ...	29.864	29.763	83.1	87.6	75.6	75.9	.892	.904	.251	.416	78	68	5.9	4.9	0	6	7	18	0	50.5	1.99	0.72	15	12	1
Year ...	29.893	29.801	78.9	83.9	73.9	73.7	.844	.842	.155	.338	85	72	5.9	5.1	4	96	74	152	39	1388.7	54.68	4.41	May 17	132	40

*At Standard level: corrected for temperature and to standard gravity.

Month	Frequency of Wind Directions at 8.30 h N	NE	E	SE	S	SW	W	NW	Calm	Frequency of Wind Force at 8.30 h 1-3	4-7	>7	Mean Wind Velocity h 8.30	h 14.30	Extremes of Temperature of the Air Max.	Date	Min.	Date	Mean Max.	Mean Min.	Max.+Min. ÷ 2	Range Max.	Min.	Mean	Frequency of Visibility at 8.30 Fog	Mist	Good Vis.
													m.p.h.	m.p.h.	F		F		F	F	F	F	F	F			
January ...	15	6	2	2	0	0	3	3	0	23	8	0	8.9	10.3	93.1	10	74.8	24	89.3	76.1	82.7	17.9	6.0	13.2	0	0	31
February ...	13	7	1	0	0	2	2	3	0	24	4	0	8.5	10.1	97.9	28	73.5	7	92.2	76.5	84.3	20.5	11.3	15.6	0	0	28
March ...	13	5	0	0	2	6	3	2	0	18	13	0	11.9	12.8	98.5	7	73.9	9	89.1	76.7	82.9	21.8	4.1	12.4	2	1	28
April ...	0	0	0	2	2	23	3	0	0	16	14	0	13.2	9.8	90.8	25	73.4	3	85.7	76.5	81.1	15.6	2.2	9.2	0	2	28
May ...	0	0	1	5	12	13	0	0	0	9	22	0	15.0	13.9	86.3	24	71.0	14	82.5	73.6	78.1	13.4	3.4	8.8	0	4	27
June ...	0	0	0	0	7	23	0	0	0	6	24	0	15.7	19.2	84.4	5	69.5	17	81.4	73.5	77.5	11.2	5.3	7.9	0	0	30
July ...	0	0	1	0	3	27	0	0	0	20	11	0	10.7	16.3	83.1	12	68.6	21	81.4	71.9	76.7	13.0	7.7	9.5	0	0	31
August ...	0	0	0	0	2	28	1	0	0	14	17	0	11.9	17.7	86.6	28	69.4	26	81.5	71.2	76.3	15.8	8.0	10.3	0	1	30
September ...	0	0	1	6	4	17	2	0	0	22	8	0	11.0	17.4	89.0	16	68.8	17	83.2	71.4	77.3	18.4	5.4	11.8	0	2	28
October ...	0	0	1	5	8	16	1	0	0	30	1	0	6.5	17.4	94.0	24	70.9	10	86.9	72.4	79.7	22.2	9.5	14.5	0	0	31
November ...	2	2	5	3	4	9	4	1	0	29	1	0	6.5	9.2	97.8	9	72.7	2	90.0	75.0	82.5	23.2	7.6	15.0	0	1	29
December ...	16	8	1	2	0	1	0	3	0	24	7	0	10.1	10.5	95.1	22	74.0	12	90.0	76.5	83.3	18.1	10.5	13.5	0	0	31
Year ...	59	28	13	25	44	165	19	12	0	235	130	0	10.8	13.7	98.5	March 7	68.6	July 21	86.1	74.3	80.2	23.2	2.2	11.8	2	11	352

SUMMARY OF METEOROLOGICAL OBSERVATIONS, 1939.

2nd Order Station. VICTORIA GARDENS, ZANZIBAR. **Non-Clove Growing Area.**

Latitude 6° 10′ S. Longitude 39° 11′ E. Altitude 18 feet. Observations taken at 0600 G.M.T.

Month	Temperature of the Air						Dew Point	Vapour Pressure	Saturation Deficit	Relative Humidity	Cloud Amount	Rainfall			Wind Frequencies								
	Max.	Min.	Mean Max.	Mean Min.	Max. + Min. ÷ 2	Dry Bulb						Total	Max. in 24 hours	No. of days	N	NE	E	SE	S	SW	W	NW	Calm
	°F	°F	°F	°F	°F	°F	°F	mb.	mb.	%		ins.	ins.										
January ...	92.0	74.0	89.2	76.8	83.0	83.0	76.0	30.5	8.0	79	6.5	3.14	1.75	8									
February ...	93.0	73.5	90.2	77.0	83.6	83.2	76.3	30.9	7.5	80	6.2	0.15	0.13	2									
March ...	94.0	74.0	88.7	77.3	83.0	81.4	76.1	30.8	5.7	84	7.9	11.16	1.90	13									
April ...	90.5	71.0	85.6	76.0	80.8	79.5	76.1	30.7	3.7	89	6.7	7.75	2.50	16									
May ...	87.0	71.5	83.6	73.7	78.7	77.2	74.5	29.1	2.8	91	7.5	33.36	5.35	27									
June ...	85.5	70.0	83.2	73.2	78.2	76.7	72.1	26.9	4.4	86	4.7	1.58	0.66	10									
July ...	85.0	66.5	83.5	71.1	77.3	75.5	70.7	25.7	4.5	85	4.5	0.47	0.38	3									
August ...	86.0	67.0	83.3	70.4	76.9	75.0	71.2	26.1	3.6	88	4.8	1.91	0.41	14	No record								
September ...	87.0	67.0	83.7	69.9	76.8	76.3	72.0	26.8	4.1	87	4.7	3.91	1.57	12									
October ...	89.0	69.0	85.7	70.6	78.1	79.4	73.0	27.8	6.4	81	4.6	1.26	0.90	8									
November ...	91.0	72.0	86.9	74.0	80.5	81.8	75.4	30.1	7.1	81	5.2	7.44	1.94	18									
December ...	93.0	74.0	90.0	77.2	83.6	83.9	75.7	30.4	9.2	77	5.0	0.47	0.24	4									
Year ...	94.0	66.5	86.1	73.9	80.0	79.4	74.1	28.8	5.6	84	5.7	72.60	5.35	135									

Temperature Station. DUNGA. **Clove Growing Area.**

Latitude 6° 08′ S. Longitude 39° 20′ E. Altitude 100 feet. Observations taken at 0600 G.M.T.

January ...	92.0	69.0	89.2	72.7	80.9	81.5	76.0	30.5	6.2	83	5.2	0.65	0.26	6									
February ...	94.0	68.0	91.2	72.9	82.1	83.9	74.5	29.1	10.5	73	6.4	0.38	0.22	5									
March ...	94.0	72.0	90.4	74.1	82.3	82.2	74.8	29.5	8.1	79	7.1	7.76	1.67	15									
April ...	96.0	70.0	87.9	72.8	80.3	80.0	74.8	29.5	5.5	85	7.3	10.02	1.60	22									
May ...	88.0	68.0	84.3	71.5	77.9	78.2	74.1	28.9	4.1	88	7.3	29.33	5.53	28									
June ...	86.0	64.0	84.2	68.8	76.5	76.7	72.3	27.1	4.2	87	6.1	2.44	0.47	15									
July ...	86.0	60.0	83.7	65.4	74.5	75.5	71.8	26.6	3.6	88	4.6	0.93	0.65	5	No record								
August ...	88.0	61.0	82.9	63.6	73.3	76.3	71.4	26.3	4.6	85	5.6	1.81	0.45	12									
September ...	88.0	60.0	84.2	65.7	74.9	77.0	71.4	26.3	5.4	84	5.3	2.52	0.95	10									
October ...	88.0	61.0	85.4	65.7	75.5	80.4	71.2	26.2	9.3	75	4.5	3.83	1.70	10									
November ...	94.0	67.0	87.6	70.1	78.9	82.4	75.0	29.7	8.1	78	5.4	7.54	1.55	18									
December ...	92.0	70.0	89.7	73.9	81.8	83.5	75.2	29.8	9.3	76	4.3	2.10	1.27	8									
Year ...	96.0	60.0	86.7	69.8	78.2	79.8	73.5	28.3	6.6	82	5.8	69.31	5.53	154									

Temperature Station. KIZIMBANI EXPERIMENTAL STATION. **Clove Growing Area.**

Latitude 6° 05′ S. Longitude 39° 16′ E. Altitude 220 feet. Observations taken at 0600 G.M.T.

January ...	90.0	71.0	86.8	73.3	80.1	81.3	74.1	28.8	7.7	79	2.3	2.10	0.96	9	27	0	2	0	2	0	0	0	0
February ...	92.0	70.0	88.1	73.8	80.9	81.9	74.3	28.9	8.3	77	1.5	0.14	0.07	3	24	0	0	0	4	0	0	0	0
March ...	94.0	72.0	87.7	74.6	81.1	80.2	74.1	28.7	6.6	82	2.9	6.60	1.35	12	16	4	0	0	9	1	1	0	0
April ...	89.0	71.0	83.5	73.1	78.3	78.4	74.1	28.8	5.4	88	4.2	7.05	1.23	18	0	0	0	0	25	3	2	0	0
May ...	84.0	69.0	81.6	71.1	76.3	75.9	72.7	27.4	3.2	90	4.4	28.62	4.82	31	1	0	1	0	26	2	1	0	0
June ...	83.0	62.0	81.0	68.8	74.9	75.0	69.8	24.9	4.7	84	2.2	2.59	0.68	12	0	0	0	3	19	7	1	0	0
July ...	84.0	63.0	81.5	66.7	74.1	74.6	70.2	25.1	4.2	85	1.5	0.11	0.09	2	0	0	0	2	22	7	0	0	0
August ...	83.0	63.0	80.9	66.0	73.5	74.9	69.8	24.8	4.7	84	2.4	3.80	1.43	17	0	0	0	0	27	4	0	0	0
September ...	85.0	62.0	81.6	66.6	74.1	76.1	70.0	25.0	5.7	81	3.1	4.03	0.94	15	0	0	1	1	25	2	1	0	0
October ...	86.0	64.0	83.1	68.0	75.5	79.4	71.1	25.9	8.3	75	4.0	4.71	1.05	12	0	0	18	2	11	0	0	0	0
November ...	87.0	69.0	84.8	71.2	78.0	81.1	73.9	28.6	7.7	79	4.3	10.32	1.49	21	0	0	27	1	0	2	0	0	0
December ...	89.0	72.0	87.0	74.2	80.6	82.3	74.5	29.2	8.4	77	4.3	1.40	0.35	12	6	3	15	5	0	0	2	0	0
Year ...	94.0	62.0	84.0	70.6	77.3	78.4	72.4	27.2	6.2	82	3.1	71.47	4.82	164	74	7	64	14	170	28	8	0	0

Temperature Station. WETE, PEMBA. **Clove Growing Area.**

Latitude 5° 04′ S. Longitude 39° 43′ E. Altitude 60 feet. Observations taken at 0600 G.M.T.

January ...	88.0	71.0	87.0	73.5	80.3	82.2	73.6	28.2	9.4	75	5.9	2.60	0.61	8	0	24	0	0	0	0	7	0	0
February ...	90.5	70.5	88.7	73.2	80.9	82.8	74.3	29.0	9.3	76	6.4	0.03	0.02	2	0	27	0	0	0	0	1	0	0
March ...	91.5	71.0	88.7	73.9	81.3	82.9	73.2	27.9	10.6	73	6.1	2.71	1.15	7	0	26	2	0	0	1	2	0	0
April ...	90.0	72.0	85.6	74.0	79.8	80.7	74.8	29.5	6.4	82	7.0	12.18	2.56	22	0	0	0	0	0	14	16	0	0
May ...	87.0	70.0	82.5	71.8	77.1	78.1	73.6	28.0	4.8	86	6.6	33.83	4.07	29	0	0	0	0	0	20	11	0	0
June ...	85.0	67.0	82.4	69.6	76.0	77.1	71.4	26.2	5.7	83	4.6	3.58	0.56	23	0	0	0	0	0	27	3	0	0
July ...	83.0	65.0	81.7	67.2	74.5	76.3	69.6	24.7	6.2	80	3.6	1.04	0.51	8	0	0	0	0	0	31	0	0	0
August ...	83.5	66.0	80.3	66.9	73.6	76.2	69.8	24.9	6.0	80	3.9	1.40	0.41	16	0	0	0	0	0	21	10	0	0
September ...	87.0	65.0	82.8	67.5	75.1	78.4	69.4	24.6	8.6	74	3.9	0.67	0.24	9	0	0	0	0	0	25	5	0	0
October ...	88.0	66.5	85.7	68.5	78.1	81.4	69.8	24.9	11.6	68	3.8	1.49	1.15	8	0	0	0	11	0	17	3	0	0
November ...	92.0	69.0	86.7	71.5	79.1	83.0	73.2	27.9	10.6	73	6.4	12.60	2.15	20	0	0	0	12	0	18	0	0	0
December ...	90.0	72.5	87.9	74.6	81.3	84.1	73.2	28.0	11.8	71	5.9	1.28	0.39	15	0	0	0	9	0	22	0	0	0
Year ...	92.0	65.0	85.0	71.0	78.1	80.3	72.2	27.0	8.4	77	5.3	73.41	4.07	167	0	77	2	32	0	196	58	0	0

RAINFALL STATIONS, 1939.

Months	Clove Growing Areas																		Non-Clove Growing Areas			
	ZANZIBAR								PEMBA										ZANZIBAR			
	Kidichi		Machui		Selem		Mkokotoni		Kigomacha		Matangatwani		Mkoani		Mtambili		Wete		Chwaka		Makunduchi	
	Rain	Wet Days	Rain	Wet Days	Rain	Wet Days	Rain	Wet Days	Rain	Wet Days	Rain	Wet Days	Rain	Wet Days	Rain	Wet Days	Rain	Wet Days	Rain	Wet Days	Rain	Wet Days
January ...	2·62	8	1·88	5	3·89	11	1·41	5	0·64	4	2·21	8	2·90	4	3·22	9	2·60	8	...	...	1·33	1
February ...	1·16	3	0·37	3	0·15	4	0·69	2	0·05	2	0·03	2	0·25	2	1·26	5	0·03	2	0·29	4	0·48	3
March ...	9·48	12	6·62	11	7·37	11	3·88	8	1·82	5	2·23	10	2·89	6	7·16	11	2·71	7	5·93	10	10·25	12
April ...	6·56	17	7·32	18	6·79	18	6·81	19	3·74	13	14·14	19	13·68	16	11·15	22	12·18	22	9·29	14	17·82	15
May ...	24·49	30	28·88	30	25·90	30	18·16	26	28·74	27	30·70	31	37·96	23	40·99	27	33·83	29	32·16	25	34·66	19
June ...	1·79	11	2·30	12	1·61	10	1·75	10	2·95	14	4·32	23	4·40	6	4·22	20	3·58	23	4·70	11	2·08	10
July ...	0·16	4	0·14	4	0·34	4	1·17	4	0·93	7	1·08	18	1·18	3	0·51	8	1·04	8	0·73	7	0·68	4
August ...	2·59	14	3·85	21	5·61	16	6·28	20	3·67	16	2·87	17	1·59	3	1·22	17	1·40	16	2·08	12	0·97	5
September ...	4·94	14	4·01	14	3·52	14	3·91	10	1·80	9	0·70	10	3·11	5	1·32	6	0·67	9	0·62	3	1·41	4
October ...	3·31	10	3·11	14	2·47	16	0·14	2	4·09	12	3·47	6	1·24	6	1·59	3	1·49	8	0·08	1	0·55	3
November ...	10·17	21	7·99	20	10·52	22	4·36	9	4·11	12	9·90	18	11·52	15	6·86	15	12·60	20	4·94	8	4·42	7
December ...	1·95	11	2·70	14	1·04	9	0·21	1	0·35	3	0·92	12	2·06	12	7·56	15	1·28	15	3·40	2	2·26	6
Total 1939 ...	69·22	155	69·17	166	69·21	165	48·77	116	52·89	124	72·57	174	82·68	101	87·06	158	73·41	167	64·22	97	76·89	89
Total 1938 ...	78·18	155	82·23	168	79·20	168	76·70	128	68·51	145	94·59	190	80·05	131	95·71	191	82·33	170	63·21	96	71·05	79

Note.—Rainfall in inches.

APPENDIX II.

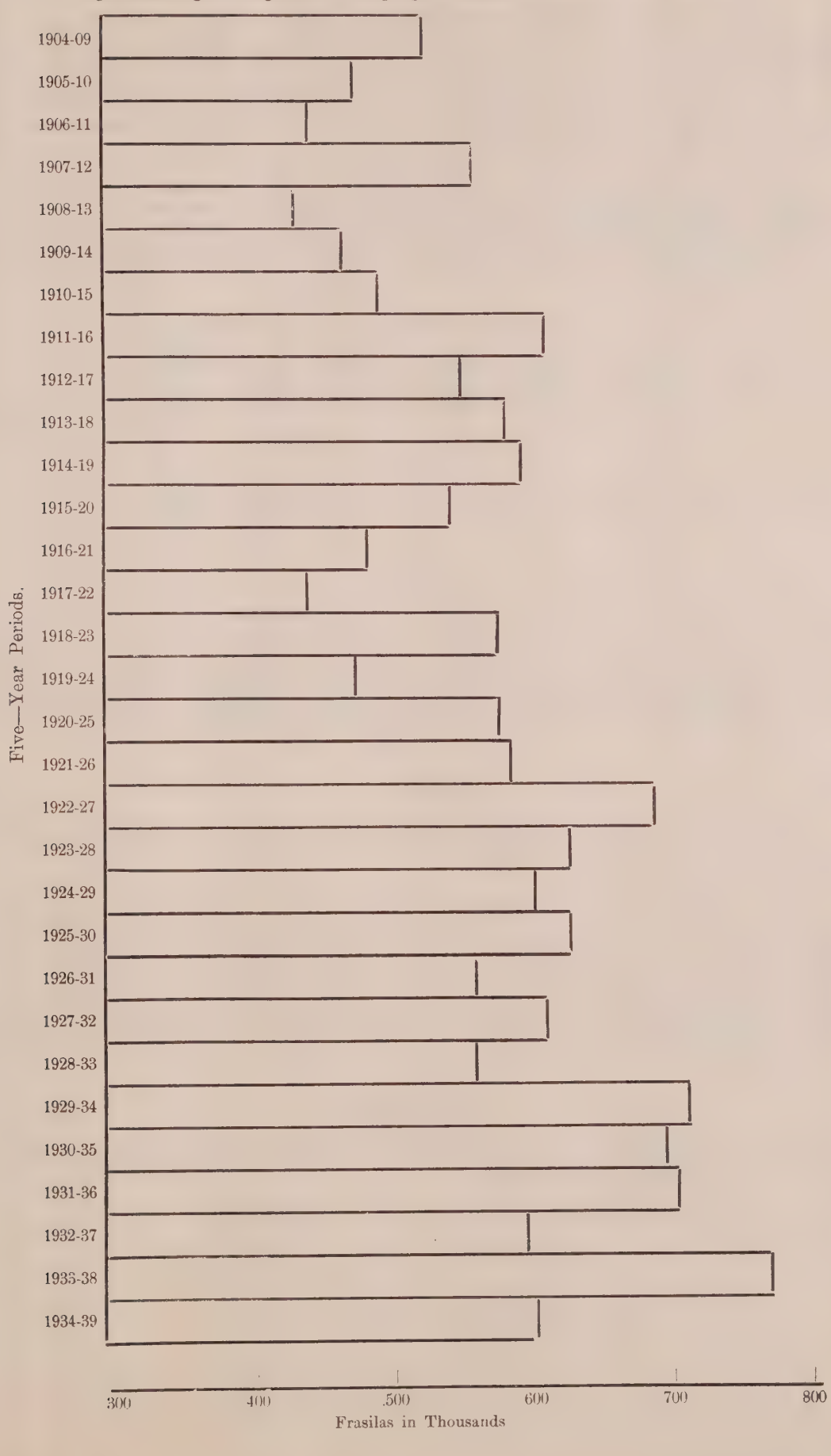
Approximate Production of Cloves in Frasilas of 35 lbs. for 35 Crop Years. (1st July to 30th June).

(Based on receipts of cloves at the Customs Clove Depôt).

Season	Zanzibar Fras.	Pemba Fras.	Total Fras.	Mean Crop per season in five year periods Fras.
1904/05	81,000	654,000	735,000	
1905/06	178,435	129,735	308,170	—
1906/07	63,004	203,496	266,500	—
1907/08	213,662	541,993	755,655	—
1908/09	165,727	449,691	615,418	536,100
1909/10	109,678	300,047	409,725	471,100
1910/11	52,100	139,307	191,407	447,700
1911/12	216,507	582,153	798,660	554,200
1912/13	31,018	104,368	135,386	430,100
1913/14	145,586	638,094	783,680	463,800
1914/15	194,920	331,389	526,309	487,100
1915/16	141,641	655,116	796,757	608,200
1916/17	208,716	302,919	511,635	550,800
1917/18	63,958	234,239	298,197	583,300
1918/19	259,273	565,229	824,502	591,500
1919/20	93,847	168,703	262,550	538,700
1920/21	231,831	316,446	548,277	489,000
1921/22	65,819	200,983	266,802	440,100
1922/23	291,417	690,498	981,915	576,800
1923/24	75,027	236,767	311,794	474,300
1924/25	240,952	520,490	761,442	574,000
1925/26	219,192	392,622	611,814	586,800
1926/27	203,843	529,186	733,029	680,000
1927/28	190,370	500,382	690,752	621,800
1928/29	74,828	125,740	200,568	599,500
1929/30	318,647	610,296	928,943	633,000
1930/31	51,796	201,320	253,116	561,300
1931/32	175,070	760,786	935,856	601,800
1932/33	242,772	244,594	487,366	561,200
1933/34	146,098	781,090	927,188	706,500
1934/35	360,037	503,415	863,452	693,400
1935/36	65,938	232,571	298,509	702,500
1936/37	45,096	351,568	396,664	594,600
1937/38	446,500	909,416	1,355,916	768,300
1938/39	39,879	115,211	155,090	612,000
Average for 35 seasons	162,977	406,396	569,373	

APPENDIX III.

Graph Showing Average Clove Crops per Seasonal Year in 5 Year Periods.



APPENDIX IV.

Report of the Assistant Manager of Government Plantations.

Plantation Management.—Mr. J. M. Jamison continued in charge of the Government Plantations except for a short period at the outbreak of war, during which he was relieved by Mr. I. G. C. Squire.

Field Staff.—under their new designation, there are now employed on the various Estate Groups 2 Range III and 7 Range IV Agricultural Assistants. One of the former remained seconded to the Experimental Station throughout the year.

Land.—Two important sales were negotiated in June 1939. Masingini, within the Mtoni Group, was sold for Shs. 60,000 and Bumbwi Sudi, within the Kidichi Group, realized Shs. 25,000. A number of minor transfers and exchanges were also effected.

The following figures provide some indication of the extent of the various groups now operated by the Plantation Section:—

		Number of Trees.			
		Cloves.		Coconuts.	
Group.	Acreage.	Bearing.	Non-bearing.	Bearing.	Non-bearing.
Machui	1,830	26,080	3,460	35,450	5,430
Kidichi	2,770	20,360	3,870	32,600	14,770
Selem	2,150	12,100	720	17,920	5,420
Mtoni	820	430	...	19,900	18,000
Chukwani	1,130	20	...	11,750	4,170
Town, etc.	75	30	...	3,790	370
Total	8,775	58,970	8,050	121,410	48,160

With the exception of Machui, no tree counts have been made for a number of years, and the above figures, therefore, can be considered as only very approximate. Further, the figures do not include new seedlings planted in recent years, as clove and coconut seedlings require a considerable period before it can be stated they are definitely established.

CLOVES.

Harvesting.—Figures for the small 1938/39 crop were included in the 1938 Report as picking for the season was completed during the preparation of that Report. The total crop was only 500.4 frasilas (net sale weight).

Season 1939/40.—After such a poor crop as that of 1938/39, it was reasonable to anticipate a fair crop for the season following. Expectations, however, were not realized, and only a comparatively light and extremely spasmodic harvest has been gathered. Commencing in June, picking has continued almost without a break but the crop has been very troublesome to harvest. There has been no defined Mwaka and Vuli season. At Machui, for example, picking has been continuous since June and will still carry on into 1940. The picking rate for the 1939/40 season has, so far, not exceeded 13 cents per pishi. Drying conditions were poor, except in December, when few cloves were picked. At the end of the year, the 1939/40 season had produced 118,792 lbs. of dried cloves.

COCONUTS.

Harvesting.—The total crop of nuts harvested from all plantations amounted to 3,724,422. These were accounted for as follows:—

Made into copra	...	2,766,853
Sold on the heap	...	762,274
Rotten	...	18,366
Used for seed	...	5,000
Carried over to 1940	...	171,929
Total	...	3,724,422

The decline in the price of nuts continued, and at one time touched the unprofitable figure of Shs. 13/- per 1,000. In December, due principally to local shortage, the price rose to Shs. 28, but it seems improbable that this figure will be maintained. The leasing of crop in town and other unoperated areas also produced very poor results.

COPRA.

Copra manufacture during the year accounted for 2,766,853 nuts from which a total of 444.44 tons of copra was produced. This is the highest figure for the yearly production of copra yet reached.

CULTIVATION.

All operated areas have been kept in a good state of cultivation throughout the year. An extensive, but previously neglected, clove area at Dole has received considerable attention. There has been normal replacement of casualties by the planting of both clove and coconut seedlings. An experiment with Kapok is being made at Chukwani which, if successful, may prove an economic substitute for coconuts in that area, where a large proportion of trees are non-bearing.

PLANTATION HOUSES, COPRA FACTORIES, ETC.

The only major works carried out in 1939 were (i) the erection of a copra store at Chukwani and (ii) construction of a new Seychelles kiln replacing one destroyed by fire—also at Chukwani. The building programme was interrupted at the outbreak of war, and several projected items were not proceeded with.

GENERAL.

The Plantation Section again assisted in experimental work on plots situated within the various groups, notably with pineapples, maize, citrus, rice and chillies.

FINANCE.

With a poor clove crop, and unremunerative copra prices, the year 1939 was again a disappointing one. However, by curtailing expenditure to the minimum figure necessary to maintain plantations in good order, revenue for the year has slightly exceeded expenditure.

After making necessary book adjustments for produce not sold before the end of the financial year, the following is a condensed summary of revenue and expenditure for the year:—

REVENUE.

		Shs.	Cts.	Shs.	Cts.
Cloves	...	49,166	31		
Coconuts	...	81,337	21		
Miscellaneous	...	1,109	32	131,612	84
Add:—					
Estimate value of stock carried over to 1940	...			7,910	36
			Total	139,523	20

EXPENDITURE.

Personal Emoluments	...	25,673	61		
Other Charges (including Passages)	....	112,434	82	138,108	43
			Total	138,108	43

APPENDIX V.

Report of the Government Chemist.

CHEMICAL WORK.

The chemical work of the Laboratory is summarized below under A. General Analyses, B. Agricultural Investigations, C. Miscellaneous.

A. General Analyses.

The total of samples received was 413 (compared with 791 in 1938), of which 372 were from Government Departments, 9 from Tanganyika Territory, 6 from the Clove Growers Association and 26 from private firms.

A sum of Shs. 575-25 cts. was received in fees by the Government for samples analysed for the Clove Growers Association and private firms and for the export certification of Clove oil.

The distribution of samples is shown in Table I.

TABLE I.

Department.	1st quarter.	2nd quarter.	3rd quarter.	4th quarter.	Total.
Agriculture ...	102	54	78	57	291
Health ...	—	2	1	7	10
Police ...	8	11	11	22	52
Customs ...	3	3	6	4	16
Other Departments ...	2	1	—	—	3
Total Government ...	115	71	96	90	372
Tanganyika Government ...	6	3	—	—	9
C.G.A. ...	—	1	1	4	6
Private ...	14	12	—	—	26
Total ...	135	87	97	94	413

Details of the Government samples are as follows:—

Agriculture.—Cloves, clove stems, 64; clove oil, 166; copra, 11; cattle dips, 29; milk, 6; water, 13; canned fruit, 2; Total, 291.

Health.—Milk, 8; poppy capsules, 1; Ethyl chloride, 1; Total, 10.

Police.—Opium, 18; bhang, 24; liquor, 8; paraldehyde, 2; Total, 52.

Customs.—Condensed milk, 3; methylated spirit, 9 medicines, 4; Total, 16.

Other Departments.—Public Works and Electricity, water, 2; Secretariat, mineral, 1 Total, 3.

Notes on the More Important Samples.

Agriculture.—Only three samples of cloves contained more than 16% of moisture. The average moisture content of the remaining 61 samples was 13.4%.

The export of clove stem oil from the Clove Growers Association Distillery showed a further large increase compared with 1938. Of the 166 samples taken by the Inspector of Produce, 105 were from individual drums and 61 from bulk storage tanks: sampling from bulk reduced the number of samples by 535. The samples represented 685 drums and 16 tins of oil, weighing 369,679 pounds, or approximately 165 tons, as against 101 tons in 1938 and 46½ tons in 1937. The eugenol content of all samples was determined and ranged from 89.0 to 93.5 per cent; only 11 samples fell below 92 per cent, and the average was 92.7 per cent. Refractive index (20°C.) of 100 samples varied from 1.5338 to 1.5368. Solubility (cir. 30°C.) in 70 per cent alcohol of 97 samples was from 1 in 0.75 to 1 in 0.85.

The oil content of 11 samples of copra, calculated on dry basis, varied from 67.8 to 75.3 per cent. It did not appear to be correlated with the type of kiln on which the copra was prepared.

Of 29 samples of Cattle dipping fluid, 12 were of correct arsenical strength, 4 were too strong and 13 were weak.

Sampling of milk from the Government Dairies, Mtoni, was discontinued after February. Six samples examined gave the following average figures: Total solids, 12.79%; fat 4.05%; solids-not-fat, 8.74%.

Regular chemical examinations of samples from the Zanzibar Public Water Supply were made. The results continued to show absence of marked seasonal variations and the water maintained a high degree of organic purity. Table II shows the range of the analytical figures.

TABLE II.

		Parts per 100,000.
Total solids (dried at 105°C.)	...	34.2—36.5
Alkalinity (as calcium carbonate)	...	29.8—30.4
Chlorides (as sodium chloride)	...	2.0— 2.8
Nitrogen, in free and saline ammonia	...	nil—0.001
do. in albuminoid ammonia	...	nil—0.002
do. in nitrates	...	0.016—0.032
do. in nitrites	...	nil.
Oxygen absorbed from potassium permanganate, 4 hours, 80°F.	...	0.0032—0.007

Health.—One sample of milk from a public vendor was found to be 30% deficient in solids-not-fat (standard 8.5%) and another sample was 54.7% deficient in solids-not-fat and 23.3% deficient in fat (standard 3.0%). Six samples of milk from public dairies gave the following average figures: Total solids, 12.32%; fat, 3.45%; solids-not-fat, 8.87%; preservatives, nil.

Police.—Opium was detected in 16 exhibits submitted by the Police; two gave negative results.

Bhang (Indian Hemp) was detected in 23 exhibits; 1 gave negative results. Two exhibits constituted the largest single seizure of Bhang—27 lbs.—which is on record in the Laboratory.

Of 8 liquors submitted 7 were alcoholic.

Two exhibits of Paraldehyde were submitted and were found to consist largely of acetic acid. No other explanation of the high content of acetic acid was forthcoming than that it was the result of the spontaneous oxidation of the paraldehyde on long exposure to light and air. As far as can be traced no simialr case is on record. The vendor, a pharmacist, was convicted and heavily fined; on appeal the conviction was upheld and the fines reduced.

Customs.—Three samples of condensed milk contained more than 9 per cent of fat. The prohibition of the importation of condensed milk containing less than 9 per cent of fat has now been removed. No regulations as to labelling have been published, and there is now no analytical control to prevent the sale of skimmed condensed milk as full-cream.

Nine samples of methylated spirit were correctly denatured, but in three cases the colouring was incorrect or insufficient.

Four imported medicines were found free from drugs prohibited by the Dangerous Drugs Decree.

Public Works.—Two samples of water from a borehole on Tumbatu Island were found too saline for drinking purposes.

Tanganyika Territory.—During the absence on leave of the Government Chemist, Dar-es-Salaam, urgent medico-legal work was undertaken in this Laboratory. One case involved the examination of a powder, stomach contents and human organs. No poisons were detected. Another case involved the examination of stomach contents, and the analysis of a sample of Tinc. Opii Camph., which was found to be correctly dispensed.

Clove Growers Association.—The samples submitted consisted of cloves, 2; clove stem, 2; clove oil, 2.

Private.—One sample of water was analysed in connexion with a corrosion problem.

For a firm engaged in cargo surveys 6 samples of gunny bag, 10 of sugar and 9 of condensed milk were examined.

Two hundred and twenty-six written reports were issued on the above analyses.

B. Agricultural Investigations.

No agricultural investigations beyond those of a routine nature referred to above were carried out.

C. Miscellaneous.

The campaign for the poisoning of wild pig was continued, and 16,500 weighed doses of sodium arsenite were issued to the District Administration in Zanzibar and Pemba.

Solutions required by the Medical and other Departments were prepared.

Outfits for testing water for poisons and for the control of chlorination were put together for the use of the Zanzibar Field Ambulance unit.